LISTING OF CLAIMS

1. (Original) A method of compiling a resultant image, the method comprising the steps of:

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providing a plurality of raw image data files;

providing a buffer memory structure comprising at least one buffer memory pair for each raw image data file;

identifying at least one pertinent segment from each of the raw image data files, the at least one pertinent segment being part of the resultant image;

buffering image data corresponding to the at least one pertinent segment from each raw image data file into the at least one buffer memory pair associated with the raw image data file; and

copying the at least one pertinent segment from the associated at least one buffer memory pair into a resultant image buffer.

2. (Original) The method of claim 1, wherein the step of identifying the at least one pertinent segment further comprises the steps of:

ascertaining the existence of at least one overlap of a plurality of pertinent segments in the resultant image;

determining for each overlap a predominating pertinent segment having precedence in the resultant image; and

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classifying the predominating pertinent segment as the at least one pertinent segment.

3. (Original) The method of claim 1, further comprising the step of permitting the at least one pertinent segment to be overwritten within the resultant image buffer by a predominating pertinent segment in accordance with an opaque ink model.

4. (Currently amended) A method of imaging, the method comprising the steps of:

providing a plurality of raw image data files;

providing a plurality of imaging devices;

providing a recording medium;

providing a buffer memory structure comprising at least one buffer memory pair for each raw image data file;

causing relative motion between the imaging devices and the recording medium;

identifying at least one pertinent segment from each of the raw image data files, the at least one pertinent segment being part of ~~the~~ a resultant image;

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buffering image data corresponding to the at least one pertinent segment from each raw image data file into the at least one buffer memory pair associated with the raw image data file;

copying the at least one pertinent segment from the associated at least one buffer memory pair into a resultant image buffer; and

activating the imaging devices during the relative motion and in accordance with data in the resultant image buffer, thereby applying to the recording medium a representation of the data in the resultant image buffer.

5. (Original) The method of claim 4, wherein the step of providing a buffer memory structure further comprises the steps of:

defining an imaging zone for each imaging device;

determining which imaging zones are required to image each raw image data file; and

providing, for each raw image data file, a buffer memory pair for each required imaging zone.

6. (Original) The method of claim 5, wherein the buffering step further comprises buffering image data corresponding to the at least one pertinent segment from each raw image data file into the buffer memory pair provided for each required imaging zone.

7. (Original) The method of claim 4, wherein the step of identifying at least one pertinent segment further comprises the steps of:

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ascertaining the existence of at least one overlap of a plurality of pertinent segments in the resultant image;

determining for each overlap a predominating pertinent segment having precedence in the resultant image; and

classifying the predominating pertinent segment as the at least one pertinent segment.

8. (Original) The method of claim 4, further comprising the step of permitting the at least one pertinent segment to be overwritten within the resultant image buffer by a predominating pertinent segment in accordance with an opaque ink model.

9. (Original) An imaging apparatus comprising:

a plurality of imaging devices;

a support for a recording medium;

a device to provide relative motion between the imaging devices and the support;

a buffer memory structure further comprising at least one buffer memory pair;

a resultant image buffer;

a control unit in electrical communication with the buffer memory structure and the resultant image buffer, the control unit operating so as to copy selected portions of data in the buffer memory structure into the resultant image buffer; and

a drive unit in electrical communication with the control unit, the resultant image buffer and the imaging devices, the drive unit activating the imaging devices during the relative motion and in accordance with data in the resultant image buffer, thereby applying to the recording medium a representation of data in the resultant image buffer.

10. (Original) The imaging apparatus of claim 9, wherein at least one of the control unit and the drive unit further comprises a digital computer.

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11. (Original) A method of image optimization, the method comprising the steps of:

providing image data;

providing a plurality of imaging devices;

providing a recording medium;

causing relative motion between the imaging devices and the recording medium;

generating a raw position signal indicative of the position of the imaging devices relative to the recording medium;

defining a resolution enhancement parameter;

defining an image size parameter;

defining at least one offset register;

defining at least one pixel prescaler responsive to the at least one offset register;

generating an optimized position signal by multiplying the raw position signal by the resolution enhancement and the image size parameters and dividing by the at least one pixel prescaler; and

activating the imaging devices during the relative motion in accordance with the optimized position signal and the image data, thereby applying to the recording medium an optimized representation of the image data.

12. (Original) An image optimization apparatus comprising:

a plurality of imaging devices;

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a support for a recording medium;

a device to provide relative motion between the imaging devices and the support;

a sensing system to determine the position of the imaging devices relative to the recording medium, the sensing system further comprising a position encoder and a phase locked loop, the position encoder generating a first signal indicative of the position, the phase locked loop responding to (i) the first signal, (ii) a resolution enhancement parameter and (iii) an image size parameter so as to generate a second signal, the second signal having a frequency determined by the resolution enhancement and image size parameters;

a control unit, responsive to the sensing system and to image data; and

a drive unit in electrical communication with the control unit and the imaging devices, the drive unit responding to at least one pixel prescaler and selectively activating the imaging devices during the relative motion at locations corresponding to the image data, thereby applying to the recording medium an optimized representation of the image data.

13. (Original) The image optimization apparatus of claim 12, wherein the position encoder further comprises an angular position encoder.

14. (Original) The image optimization apparatus of claim 12, wherein the second signal indicates successive imaging positions and reflects multiplication of the first signal by the resolution enhancement parameter, the second signal thereby providing an enhanced position resolution relative to the first signal.

15. (Original) The image optimization apparatus of claim 12, wherein the second signal indicates successive imaging positions and reflects multiplication of the first signal by the image size parameter, the second signal thereby scaling image size.

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16. (Original) The image optimization apparatus of claim 12, wherein the second signal is further divided by the at least one pixel prescaler.

17. (Original) The image optimization apparatus of claim 12, wherein at least one of the control unit, the drive unit, and the sensing system further comprises a digital computer.

18. (Currently amended) A method of image processing, the method comprising the steps of:

providing a plurality of raw image data files;

providing a plurality of imaging devices;

providing a recording medium;

providing a buffer memory structure comprising at least one buffer memory pair for each raw image data file;

causing relative motion between the imaging devices and the recording medium;

identifying at least one pertinent segment from each of the raw image data files, the at least one pertinent segment being part of ~~the~~ a resultant image;

buffering image data corresponding to the at least one pertinent segment from each raw image data file into the at least one buffer memory pair associated with the raw image data file;

copying the at least one pertinent segment from the associated at least one buffer memory pair into a resultant image buffer;

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generating a raw position signal indicative of the position of the imaging devices relative to the recording medium;

defining a resolution enhancement parameter;

defining an image size parameter;

defining at least one offset register;

defining at least one pixel prescaler responsive to the offset register;

generating an optimized position signal by multiplying the raw position signal by the resolution enhancement and the image size parameters and dividing by the at least one pixel prescaler; and

activating the imaging devices during the relative motion in accordance with data in the resultant image buffer and the optimized position signal, thereby applying to the recording medium an optimized representation of the data in the resultant image buffer.

19. (Original) The method of claim 18, wherein the step of providing a buffer memory structure further comprises the steps of:

defining an imaging zone for each imaging device;

determining which imaging zones are required to image each raw image data file; and

providing, for each raw image data file, a buffer memory pair for each required imaging zone.

20. (Original) The method of claim 19, wherein the buffering step further comprises buffering image data corresponding to the at least one pertinent segment from each raw image data file into the buffer memory pair provided for each required imaging zone.

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21. (Original) The method of claim 18, wherein the step of identifying at least one pertinent segment further comprises the steps of:

ascertaining the existence of at least one overlap of a plurality of pertinent segments in the resultant image;

determining for each overlap a predominating pertinent segment having precedence in the resultant image; and

classifying the predominating pertinent segment as the at least one pertinent segment.

22. (Original) The method of claim 18, further comprising the step of permitting the at least one pertinent segment to be overwritten within the resultant image buffer by a predominating pertinent segment in accordance with an opaque ink model.

23. (Original) An image processing apparatus comprising:

a plurality of imaging devices;

a support for a recording medium;

a device to provide relative motion between the imaging devices and the support;

a buffer memory structure further comprising at least one buffer memory pair;

a resultant image buffer;

a sensing system to determine the position of the imaging devices relative to the recording medium, the sensing system further comprising a position encoder and a phase locked loop, the position encoder generating a first signal indicative of the position, the phase locked loop responding to (i) the first signal, (ii) a resolution enhancement parameter and (iii) an image size parameter so as to generate a second signal, the second signal having a frequency determined by the resolution enhancement and image size parameters;

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a control unit responsive to the sensing system and in electrical communication with the buffer memory structure and the resultant image buffer, the control unit operating so as to copy selected portions of data in the buffer memory structure into the resultant image buffer; and

a drive unit in electrical communication with the control unit, the resultant image buffer and the imaging devices, the drive unit responding to at least one pixel prescaler and operating so as to activate the imaging devices during, and at specific locations of, the relative motion, in accordance with data in the resultant image buffer, thereby applying to the recording medium an optimized representation of data in the resultant image buffer.

24. (Original) The image processing apparatus of claim 23, wherein the position encoder further comprises an angular position encoder.

25. (Original) The image processing apparatus of claim 23, wherein the second signal indicates successive imaging positions and reflects multiplication of the first signal by the resolution enhancement parameter, the second signal thereby providing an enhanced position resolution relative to the first signal.

26. (Original) The image processing apparatus of claim 23, wherein the second signal indicates successive imaging positions and reflects multiplication of the first signal by the image size parameter, the second signal thereby scaling image size.

27. (Original) The image processing apparatus of claim 23, wherein the second signal is further divided by the at least one pixel prescaler.

28. (Original) The image processing apparatus of claim 23, wherein at least one of the control unit, the drive unit, and the sensing system further comprises a digital computer.

29. (Original) An article of manufacture comprising a program storage medium having computer readable program code embodied therein for causing the compilation of image data and application of a corresponding image, the computer readable program code in the article of manufacture including:

computer readable code for causing a computer to read contents of at least one raw image data file;

computer readable code for causing a computer to identify at least one pertinent segment from each of the raw image data files;

computer readable code for causing a computer to buffer image data corresponding to the at least one pertinent segment from each raw image data file into at least one buffer memory pair;

computer readable code for causing a computer to copy the at least one pertinent segment from the at least one buffer memory pair into a resultant image buffer; and

computer readable code for causing a computer to activate a plurality of imaging devices in accordance with data in the resultant image buffer, so as to achieve application of the corresponding image.

30. (Original) A program storage medium readable by a computer, tangibly embodying a program of instructions executable by the computer to perform method steps for the compilation of image data and application of a corresponding image, the method steps comprising:

reading the contents of at least one raw image data file;

identifying at least one pertinent segment from each of the raw image data files;

buffering image data corresponding to the at least one pertinent segment from each raw image data file into at least one buffer memory pair;

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copying the at least one pertinent segment from the at least one buffer memory pair into a resultant image buffer; and

activating a plurality of imaging devices in accordance with data in the resultant image buffer, so as to achieve application of the corresponding image.

31. (Original) An article of manufacture comprising a program storage medium having computer readable program code embodied therein for causing the optimized application of image data, the computer readable program code in the article of manufacture including:

computer readable code for causing a computer to generate a raw position signal;

computer readable code for causing a computer to define a resolution enhancement parameter;

computer readable code for causing a computer to define an image size parameter;

computer readable code for causing a computer to define at least one offset register;

computer readable code for causing a computer to define at least one pixel prescaler responsive to the at least one offset register;

computer readable code for causing a computer to define an optimized position signal by multiplying the raw position signal by the resolution enhancement and the image size parameters and dividing by the at least one pixel prescaler; and

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computer readable code for causing a computer to activate a plurality of imaging devices in accordance with the optimized position signal and the image data, so as to achieve optimized application of the image corresponding to the image data.

32. (Original) A program storage medium readable by a computer, tangibly embodying a program of instructions executable by the computer to perform method steps for the optimized an application of image data, the method steps comprising:

generating a raw position signal;

defining a resolution enhancement parameter;

defining an image size parameter;

defining at least one offset register;

defining at least one pixel prescaler responsive to the at least one offset register;

generating an optimized position signal by multiplying the raw position signal by the resolution enhancement and the image size parameters and dividing by the at least one pixel prescaler; and

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activating a plurality of imaging devices in accordance with the optimized position signal and the image data, so as to achieve optimized application of the image corresponding to the image data.